

March 21, 2013

BY ELECTRONIC DELIVERY

Marlene H. Dortch, Secretary
Federal Communications Commission
445 12th Street SW
Washington DC 20554

Re: Progeny LMS, LLC
Permitted Written *Ex Parte* Presentation
WT Docket No. 11-49

Dear Ms. Dortch:

Progeny LMS, LLC (“Progeny”), by its attorneys, herein addresses the recent filings in this docket by GE Digital Energy (“GE”), dated March 13, 2013,¹ and by Plantronics, Inc. (“Plantronics”), dated March 11, 2013.²

In their previous filings in this docket, both GE and Plantronics stressed their claims that Progeny’s multilateration location and monitoring service (“M-LMS”) could cause receiver overload to Part 15 devices, preventing them from operating anywhere in the 902-928 MHz band.³ GE tried to support this argument by claiming without support that some Part 15 chipsets

¹ See Letter from David Malkin, Director, Government Affairs and Policy, GE Digital Energy, to Marlene H. Dortch, Secretary, Federal Communications Commission, Ex Parte Notice, WT Docket No. 11-49 (March 11, 2013) (“*GE Letter*”).

² See Letter from Steve Cahill, Principal RF Engineer, Plantronics, Inc., to Marlene H. Dortch, Secretary, Federal Communications Commission, Ex Parte Notice, WT Docket No. 11-49 (March 11, 2013) (“*Plantronics Letter*”).

³ See Letter from Steve Cahill, Principal RF Engineer, to Ms. Marlene H. Dortch, Secretary, Federal Communications Commission, WT Docket No. 11-49 at 5-6 (Jan. 28, 2013) (“*Plantronics January Letter*”) (arguing that “voice dropouts due to blocking will occur for base-to-headset distances of less than 20 feet unless the Progeny-to-susceptor path loss is greater than 80dB, for all channels in the band, not just those used by the Progeny 30W transmitters”); Comments of GE Digital Energy and GE MDS LLC, Docket No. 11-49, at 5-6 and 8 (filed Dec. 21, 2012) (“*GE December Comments*”).

have an overload point of -53 dBm for any signal transmitting within 10 MHz above or below the chipset's operating frequency.⁴ Progeny filed detailed responses challenging the claims of GE and Plantronics and explaining why Progeny's service has not and will not cause receiver overload to Part 15 devices.⁵ Progeny's analysis is supported by more than 18 months of independent and joint testing on Part 15 devices that showed no evidence that receiver overload will result in the presence of Progeny's service.⁶

Apparently recognizing these facts, GE and Plantronics' most recent filings have dropped these arguments and say nothing about receiver overload. They instead attempt to make different arguments regarding their claims of potential interference from Progeny's service. Progeny addresses and correspondingly refutes these new arguments herein.

GE now argues that, in a free space environment with nothing inhibiting the direct line of sight between a Progeny transmitter and a GE receiver, the Progeny signal could interfere with the reception of a desired GE signal on the same frequency when the Progeny transmitter is within 316 miles of the GE receiver.⁷ Although GE's claim may seem astonishing, the technical assumptions and calculations employed by GE produce an equally astonishing result – widely used 4 watt Part 15 devices would also interfere with the reception of a desired GE signal when the Part 15 transmitter is within 115 miles of the GE receiver.

GE further argues that a Progeny transmitter placed one mile from a GE receiver using the same frequencies would reduce the range of the GE device on those frequencies to just

⁴ See *GE December Comments* at 6.

⁵ See, e.g., *Letter From Bruce A. Olcott, Counsel to Progeny LMS, LLC*, to Ms. Marlene H. Dortch, Secretary, Federal Communications Commission, WT Docket No. 11-49 at 9-10 (Feb. 19, 2013) ("*Progeny February 19th Letter*") (addressing receiver overload claims); *Letter From Bruce A. Olcott, Counsel to Progeny LMS, LLC*, to Ms. Marlene H. Dortch, Secretary, Federal Communications Commission, WT Docket No. 11-49 at 5 (Feb. 6, 2013) ("*Progeny February 6th Letter*") (addressing Plantronics' receiver overload claims); *Response of Progeny LMS, LLC*, WT Docket No. 11-49 at 50-51 (Jan. 11, 2013) ("*Progeny Response*") (addressing GE's receiver overload claims).

⁶ See *Demonstration of Compliance with Section 90.353(d) of the Commission's Rules*, Progeny LMS, LLC, WT Docket No. 11-49 (filed Jan. 27, 2012) ("*January 2012 Field Test Report*"); Progeny & Itron Part 15 Test Report, WT Docket No. 11-49 (filed Oct. 31, 2012) ("*Progeny & Itron Joint Testing*"); Progeny & Landis+Gyr Part 15 Test Report, WT Docket No. 11-49 (filed Oct. 31, 2012) ("*Progeny & Landis+Gyr Joint Testing*"); Progeny & WISPA Testing Part 15 Test Report, WT Docket No. 11-49 (filed Oct. 31, 2012) ("*Progeny & WISPA Joint Testing*"); Itron Second Round Test Results – Progeny System, WT Docket No. 11-49 (filed Dec. 17, 2012) ("*Itron Unilateral Testing*").

⁷ See *GE Letter*, Attachment at 6.

0.11 miles.⁸ Here again, using the same assumptions, the range of the GE device would be reduced to just 0.32 miles when placed within one mile of a 4 watt Part 15 device.

These facts are noted primarily to emphasize how unrealistic these “worst case theoretical analysis” are, essentially projecting extraordinary harm from other unlicensed devices in the absence of Progeny’s service. If the scenarios were realistic, it would raise legitimate questions regarding how GE’s supervisory control and data acquisition (“SCADA”) devices could successfully function today in the presence of millions of Part 15 devices in the 902-928 MHz band. The answer, of course, lie in the normal frequency hopping capabilities of GE’s SCADA devices which ensure that, if brief interference is experienced on one or multiple channels in the 902-928 MHz band, the desired data will still be received successfully using other channels within the hopping range of the SCADA device, exactly as the device would do in the presence of Progeny’s signals.

The frequency hopping capabilities of GE’s SCADA devices will often be even more effective in avoiding co-frequency transmissions with Progeny’s M-LMS network than they are in avoiding interference from many other Part 15 devices. This is because Progeny’s M-LMS signals use bandwidths of only 2 megahertz. In contrast, many Part 15 devices use much larger bandwidths (such as the 8 to 20 megahertz bandwidths employed by fixed broadband devices), making it much harder for frequency hopping devices to avoid co-frequency conflicts with them. Therefore, similar to the joint test results of Itron and Landis+Gyr AMR equipment, Progeny’s service will cause significantly less frequency conflicts with GE’s SCADA devices than the conflicts that already result from ubiquitously deployed Part 15 devices. Therefore, Progeny’s service will not cause unacceptable levels of interference to GE’s SCADA equipment.

Despite these facts, GE argues that the Commission should force Progeny to reduce the power of its service to 4 watts (the same as unlicensed Part 15 devices),⁹ which would effectively revoke Progeny’s M-LMS licenses. GE suggests that Progeny compensate by constructing additional transmitters¹⁰ even though, as explained above, the operation of Progeny’s network at 4 watts with additional towers would almost certainly result in even more interference to GE receivers than Progeny’s proposed operation of far fewer transmitters at its current authorized power level. GE further argues that primary M-LMS licenses should be moved to a different spectrum band,¹¹ which would directly contradict with the goal of the Commission and the

⁸ *See id.*

⁹ *See id.*, Attachment at 7.

¹⁰ *See id.*

¹¹ *See id.*

Administration of increased spectrum sharing between primary licensed and secondary unlicensed services as a means of ensuring the efficient use of scarce spectrum resources.¹²

Plantronics employs an even more aggressive stance – repeatedly arguing that Progeny’s service may prevent Plantronics’ wireless headsets from simultaneously using every single kilohertz in the 902-928 MHz band on an uninterrupted basis. Specifically, Plantronics has argued that signals from Progeny’s M-LMS network may prompt its wireless headsets to automatically shift to other channels in the 902-928 MHz band, possibly preventing Plantronics from packing the entire band with wireless headset transmissions in any location where it seeks to operate.

A legitimate question exists, of course, regarding whether a manufacturer of unlicensed Part 15 devices has a reasonable expectation of unfettered and simultaneous access to the entire 26 megahertz of spectrum in the 902-928 MHz at every location where it operates. Progeny does not address this question, however, because, as Progeny has repeatedly explained in its prior responses to Plantronics, Progeny’s service will not prevent Plantronics’ wireless headsets from simultaneously using the entire 902-928 MHz band even in worst case conditions such as within a few hundred meters from a Progeny transmitter.¹³

As Plantronics has explained, its wireless headsets employ 15 channels in the 902-928 MHz band,¹⁴ resulting in sufficient capacity for 54 simultaneous callers.¹⁵ This does not mean, however, that Plantronics’ headsets are limited to call centers of 54 seats or less. As Plantronics explains in its marketing literature, large call centers can use a mix of wireless headsets that operate in different spectrum bands, and channels are reused many times throughout the call center location (resulting in significant multiples of the available channels).¹⁶ Not only does Plantronics manufacture wireless headsets that operate in other spectrum bands, but Plantronics no longer promotes its 900 MHz wireless headsets as a new product on its website,¹⁷ apparently making them available as replacement equipment for legacy owners of 900 MHz systems, or to augment congested installations of their preferred DECT equipment. Thus, Plantronics’ statistics

¹² See, e.g., “Realizing the Full Potential of Government-Held Spectrum to Spur Economic Growth,” President’s Council of Advisors on Science and Technology (PCAST) (July 2012) (exploring a new spectrum sharing paradigm including the authorization of secondary often unlicensed services in the same spectrum bands as primary licensed services).

¹³ See *Progeny February 6th Letter* at 1-5; *Progeny Response* at 51-53.

¹⁴ See *id.* at 6.

¹⁵ See “Plantronics UC Toolkit Wireless Voice in the Office Environment,” at 5, available at: <http://www.plantronics.com/us/partners/consultant-alliance/media/wireless-office-whitepaper.pdf> (last visited March 18, 2013) (“Plantronics User Instructions”).

¹⁶ See *id.*

¹⁷ <http://www.plantronics.com/us/category/contact-center> (last visited March 20, 2013)

on the number of large call centers that exist in the United States are irrelevant and misleading without concurrently disclosing how many of those large call centers use the maximum number of wireless headsets operating in the 902-928 MHz band.¹⁸

Plantronics also argues that its wireless headset users need to be able to wander free throughout the call center and cannot be required to spend a significant amount of their time at their workstations where they might retrieve service records for callers, input customer orders, or otherwise interact with electronic databases. Plantronics claim, however, is contradicted by its own user instructions, which explain that, in order to operate at the maximum capacity of 54 simultaneous headset users, multiple users in the same room “must share the same channel.”¹⁹ This channel sharing works as long as headset users stay relatively close to their workstations. “As users roam away from their base,” the instructions warn, “the potential for conflict over a shared channel increases.”²⁰ Because of this, Plantronics explains, “[i]n a large room with many users and high phone usage rates, roaming range may be reduced significantly.”²¹

It is important to note that the presence of Progeny service will have no effect on this conflict between Plantronics’ system capacity and the ability of its users to roam away from their workstations. Even in worst case conditions with a Progeny transmitter within a few hundred meters of a very large call center (*i.e.*, one that simultaneously uses at least 54 headsets in the 900 MHz band), the vast majority of Plantronics wireless headset users will still be able to wander away from their workstations as long as a fraction of headset users stay within about 26 feet of their workstations (where their headsets *can* operate directly co-frequency with Progeny’s signals without detecting Progeny’s transmissions).

Again, this assumes absolute worst case conditions. In more normal environments with greater distances between the closest Progeny transmitter and the call center, the distances at which headset users can wander while operating on the same frequency as Progeny’s service increases significantly. Signal attenuation from buildings, glass and other obstruction also increase the range of Plantronics’ headsets in the presence of Progeny’s network. In this regard, Plantronics makes implausible claims regarding the attenuation levels of radio signals in an urban or suburban environment.

For example, Plantronics asserts that “ordinary window glass has negligible attenuation” for radio signals in the 902-928 MHz band.²² It is widely accepted in wireless industry literature

¹⁸ See *Plantronics Letter* at 2 (providing redacted data on the number of call centers in the United States).

¹⁹ See *Plantronics User Instructions* at 7.

²⁰ *Id.* at 8.

²¹ *Id.*

²² *Plantronics Letter* at 5.

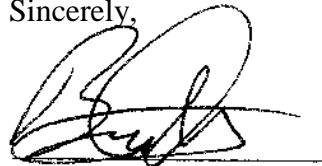
that the environmentally efficient glass currently required by many building codes for commercial construction has attenuation levels of at least 20 dB.

Plantronics also challenges Progeny's use of a 2.8 path loss exponent when calculating the anticipated attenuation rate for Progeny's transmissions in an urban environment.²³ Plantronics argues at length regarding why it believes a 2.8 path loss exponent is inappropriate even though such an exponent is clearly conservative for calculating the attenuation rate of radios signals from elevated outdoor urban transmitters. In any event, Progeny did not select a 2.8 path loss exponent at random. 2.8 was the *actual* rate of signal attenuation that Plantronics implicitly documented in its December 20, 2012 comments describing the results of tests that it claims to have conducted in a location in downtown San Jose that was a few hundred meters from a nearby Progeny transmitter.²⁴

In summary, neither GE nor Plantronics has made any credible claim regarding why its Part 15 devices might experience any difficulty operating on a shared basis in the 902-928 MHz band with Progeny's E911 position location network. The Part 15 products of both manufacturers are specifically designed to operate successfully in the existing noisy environment of the 902-928 MHz band, using frequency hopping and automatic channel selection to avoid channel conflicts with other Part 15 devices, including other Part 15 devices that employ extremely wide bandwidths, 100 percent duty cycles, and unpredictable ubiquitous deployment in the 902-928 MHz band. Progeny's E911 position location network will instead employ relatively narrow bandwidths, minimal duty cycles of no more than 20 percent, and transmitter site selection that will maximize the distance between Progeny's M-LMS beacons and unlicensed Part 15 devices. Therefore, the Commission should promptly conclude that Progeny has satisfied its obligation to demonstrate that its primary licensed service will not cause unacceptable levels of interference to unlicensed Part 15 devices.

Thank you for your attention to this matter. Please contact the undersigned if you have any questions.

Sincerely,



Bruce A. Olcott
Counsel to Progeny LMS, LLC

²³ *Id.* at 4-6.

²⁴ *See Comments of Plantronics*, WT Docket No. 11-49, at 6 (Dec. 20, 2012).